



Two-Phase Flow Separator Experiment (TPFSE)

Glenn Research Center

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Objective:

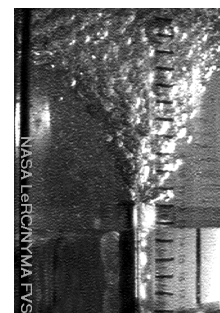
- ◆ Address the design and performance of passive two-phase flow separator technologies.
- ◆ Determine range of flow rates for acceptable performance.
- ◆ Quantify the effect of fluid properties and separator geometry.
- ◆ Determine separator response and stability envelope to startup, shutdown and liquid slugging conditions.

Relevance/Impact:

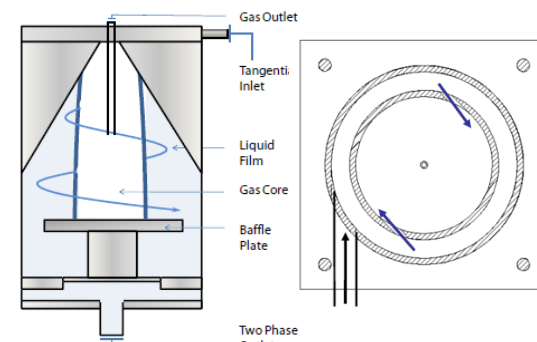
- ◆ Gas-liquid separators are targeted for use in Active Thermal Control Systems (ATCS) and Advanced Life Support (ALS) applications
- ◆ Prevent degraded performance or shortened life for components that accept a single phase input, i.e., centrifugal pumps and compressors.
- ◆ Promote enhanced phase change by removing second phase and to promote contact with heat transfer surface.

Development Approach:

- ◆ Design and build experiment package that can meter air and water into test articles.
- ◆ Two different design concepts (one specified by each PI team) for cyclonic separators will be tested.
- ◆ Technology customer co-I will specify minimal design performance parameters. PI's will have opportunity to expand that performance envelope.



Reduced Gravity
Bubble Vortex



Cyclonic Concepts

ISS Resource Requirements

Accommodation (carrier)	Fluids Integrated Rack (FIR)
Upmass (kg) (w/o packing factor)	TBD
Volume (m ³) (w/o packing factor)	TBD
Power (kw) (peak)	TBD
Crew Time (hrs) (installation/operations)	TBD
Launch/Increment	TBD

Revision Date: 02/26/2010

Project Life Cycle Schedule

Milestones	MCR	SRR	PDR	CDR	VRR	Safety	FHA	Launch	Ops	Return	Final Report
Actual	9/2010	9/2010	10/2011	4/2012	n/a	TBD	12/2013	TBD	TBD	TBD	Return+18m
Actual/Baseline											